

Light and the Diameter of the white Ring ( which was now become the third Ring ) being about 3 Inches.

The Colours of the Rings in the middle began now to grow very dilute, and if the distance between the two beams was increased half an Inch, or an Inch more, they vanished whilst the white Ring, with one or two of the Rings next it on either side, continued still visible. But if the distance of the two beams of Light was still more increased these also vanished: For the Light which coming from several parts of the Hole in the Window fell upon the Speculum in several Angles of incidence made Rings of several bignesses, which diluted and blotted out one another, as I knew by intercepting some part of that Light. For if I intercepted that part which was nearest to the Axis of the Speculum the Rings would be less, if the other part which was remotest from it they would be bigger.

## O B S. XII.

When the Colours of the Prism were cast successively on the Speculum, that Ring which in the two last Observations was white, was of the same bigness in all the Colours, but the Rings without it were greater in the green than in the blue, and still greater in the yellow, and greatest in the red. And, on the contrary, the Rings within that white Circle were less in the green than in the blue, and still less in the yellow, and least in the red. For the Angles of reflexion of those rays which made this Ring being equal to their Angles of incidence, the fits of every reflected ray within the Glass after

after reflexion are equal in length and number to the fits of the same ray within the Glass before its incidence on the reflecting surface; and therefore since all the rays of all sorts at their entrance into the Glass were in a fit of transmission, they were also in a fit of transmission at their returning to the same surface after reflexion; and by consequence were transmitted and went out to the white Ring on the Chart. This is the reason why that Ring was of the same bigness in all the Colours, and why in a mixture of all it appears white. But in rays which are reflected in other Angles, the intervals of the fits of the least refrangible being greatest, make the Rings of their Colour in their progress from this white Ring, either outwards or inwards, increase or decrease by the greatest steps; so that the Rings of this Colour without are greatest, and within least. And this is the reason why in the last Observation, when the Speculum was illuminated with white Light, the exterior Rings made by all Colours appeared red without and blue within, and the interior blue without and red within.

These are the Phænomena of thick convexo-concave plates of Glass, which are every where of the same thickness. There are yet other Phænomena when these plates are a little thicker on one side than on the other, and others when the plates are more or less concave than convex, or plano-convex, or double-convex. For in all these cases the plates make Rings of Colours, but after various manners; all which, so far as I have yet observed, follow from the Propositions in the end of the third part of this Book, and so conspire to confirm the truth of those Propositions. But the Phænomena